

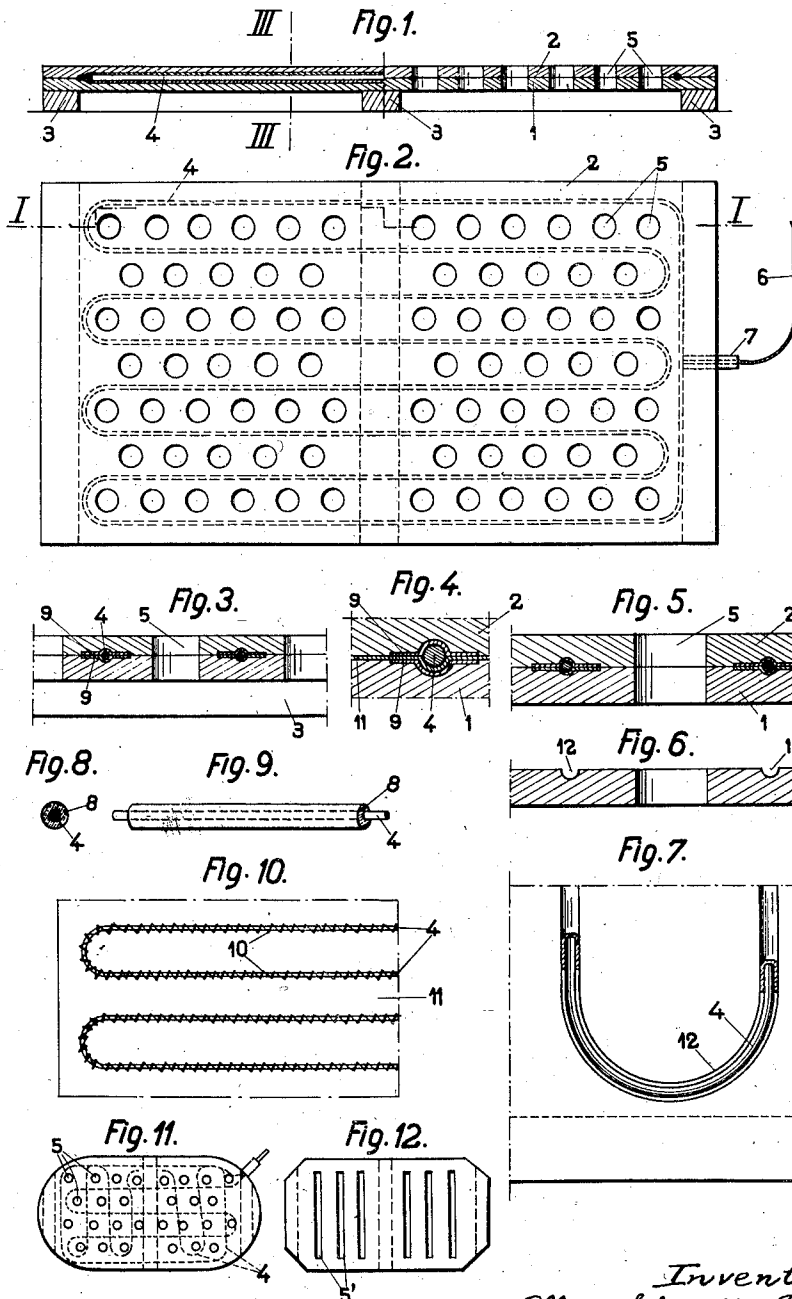
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ELECTRIC HEATING ELEMENT AND METHOD OF MANUFACTURING SAME

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ELECTRIC HEATING ELEMENT AND METHOD OF MANUFACTURING SAME.

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My invention relates to electric heating elements and to a method of manufacturing such elements, and it is an object of my invention to provide an element which is simple and cheap and generates a pleasant radiation.

To this end, I provide a plate or a pair of plates made from inflammable fibrous material such as wood or wood substance, which has been treated so as to make it fireproof or to reduce its inflammability, and I embed the heating wire in or between the plate or plates.

The heat emitted by such an element is "soft" that is, more pleasant than the "hard" heat emitted from metal heating elements.

Preferably, the heating element is perforated in order to increase its radiating surface, and the heating wire should be so arranged as to surround the perforations on all sides, to the extent practicable. This further increases the total amount of heat which is radiated from the element.

I prefer, in manufacturing my heating element, to insert a heating wire between two plates, for instance, of wood, and to exert transverse pressure on the plates so that the wire is forced into the mating faces of the plates. This method which is very simple has the additional advantage that it gives a most intimate contact for the heat transfer from the heating wire to the body of the element because the formation of cavities or open cracks is effectively prevented. Besides, it is not necessary to form grooves or other recesses in the mating faces of the plates before the heating wire is inserted. On the other hand, grooves may be made if desired, for instance if the wire is rather thick.

Where wood substance is used for the heating element, the intimate contact of the heating wire and the body of the element may be obtained by casting the substance about the wire.

A particularly simple method of making the heating element consists in sewing the heating wire on a plate of insulating material, or sewing it into such material, and embedding the plate on which the wire has been sewn in a definite position, into the plates or the wood substance.

In order to obtain a perfectly tight outer surface of the heating element, the element, after having been finished, is impregnated with a substance adapted to fill its pores and other openings, for instance, by immersion in an agent of this kind. It is also possible

to enhance the resistance to fire in the plate, which, as mentioned, is rendered fireproof or less inflammable previous to being combined with the wire, by suitable composition of the impregnating agent.

In the drawings, heating elements manufactured in accordance with my invention, are illustrated by way of example.

In the drawings

Fig. 1 is a sectional elevation of a heating element on the line I—I of Fig. 2,

Fig. 2 is a plan view of the element,

Fig. 3 is a section on the line III—III of Fig. 1, on a larger scale,

Fig. 4 is a reproduction of part of Fig. 3, on a still larger scale,

Fig. 5 is a section through one of the perforations of the heating element, showing plates grooved for the reception of the heating wires,

Fig. 6 shows separately the lower plate,

Fig. 7 is a plan view of this plate, showing part of the heating wire in position,

Figs. 8 and 9 are a cross section and an elevation of a wire coated with insulating material,

Fig. 10 is a plan view of a plate of insulating material with heating wire sewn thereon,

Figs. 11 and 12 are plan views of modified heating elements.

Referring first to Figs. 1 to 4, the element consists of two plates 1, 2, of wood or the like, 3 are supporting strips for the lower plate 1, and 4 is the heating wire. After this wire has been inserted between the plates 1 and 2, the plates are forced together and connected by an adhesive or similar means, if desired. Registering perforations are formed in the upper and lower plates at 5 which extend through both plates. The object of these perforations is to increase the heat radiation. If desired, they may be made in one of the plates only or each plate may be recessed instead of being perforated.

Fig. 2 shows the arrangement of the heating wire within the finished element. 4 is the wire, 6 is a line wire supplying current, and 7 is a plug or the like.

The wire 4 may be provided with an insulating layer 8 as shown in Figs. 8 and 9 and may be embedded with or without this layer between plates 9 of mica inserted between the plates 1 and 2, as shown in Figs. 3 and 4.

Fig. 10 shows an insulating plate 11 on which the wire 4 is sewn by means of a thread.

10 and the plate with the wire is inserted between the plates 1, 2. If desired, mica plates 9 may be used in this case, as described.

5 If the wire 4 is very thick, the plates 1 and 2, or one of them, may be grooved at 12, as shown in Figs 5 to 7.

10 The element shown in Fig. 11 is of substantially rectangular shape, with rounded edges at both ends. The heating wire is so arranged that its windings intersect and surround the perforations 5 on all sides.

15 The heating element illustrated in Fig. 12 is rectangular with chamfered corners, and its perforations 5' are substantially rectangular slots.

20 It will be understood that I am not limited to a definite shape of the heating element nor to a definite shape or arrangement of heating wires, nor to a definite thickness or other dimension of the heating element or its wire 4.

I claim:

25 1. A heating element comprising a base of inflammable fireproofed poor heat conducting material and a heating wire snugly embedded in said base.

30 2. A heating element comprising a base of inflammable fireproofed poor heat conducting material, a heating wire snugly embedded in said base, and an insulating layer inserted between said wire and said base.

35 3. A heating element comprising a base of normally inflammable material which has been fireproofed, said base being provided with perforations passing through the same and occupying a predetermined arrangement therein, and a heating wire embedded in said base so as to follow the arrangement of said perforations.

4. A heating element comprising a base of

normally inflammable material which has 40 been fireproofed, said base being provided with perforations passing through the same and a heating wire embedded in said base in the vicinity of said perforations.

45 5. A heating element comprising a base of normally inflammable material which has been fireproofed, said base being provided with recesses in a surface thereof, and a heating wire embedded in said base in the vicinity of said recesses. 50

55 6. A heating element comprising two parallel plates of inflammable fireproofed material, and a heating wire embedded between said plates.

60 7. Method of manufacturing heating elements consisting in inserting a heating wire between two plates of inflammable fireproofed poor heat conducting material and exerting pressure on said plates to force said wire into said plates. 65

65 8. Method of manufacturing heating elements consisting in forcing a heating wire into a plate of inflammable fireproofed poor heat conducting material by pressure.

70 9. Method of manufacturing heating elements consisting in securing a heating wire to a base of insulating material and combining said wire and its base with a plate of inflammable fireproofed poor heat conducting material by pressure. 75

10. Method of manufacturing heating elements consisting in forcing a heating wire into a plate of inflammable fireproofed material by pressure, and impregnating said plate with an agent adapted to fill its pores and other cavities.

In testimony whereof I affix my signature.

ALBERT SCHMIDT-PREDARI.